

ACCESSORIES AND DETAILS

BRIDGING REQUIREMENTS FOR K-SERIES JOISTS

Number of Rows of Bridging***
Distances are Span Lengths

Section Numbers*	ERECTION STABILITY SPANS (SJI Spec. Section 6)		1 Row	2 Rows	3 Rows	4 Rows				
	Depth	Span Less Than **								
#1	10	21'	Up Thru 17'	Over 17' thru 26'	Over 26' thru 28'					
	12	23'								
	14	27'								
#2	16	29'	Up thru 21'	Over 21' thru 30'	Over 30' thru 32'					
#3	12	25'	Up thru 18'	Over 18' thru 26'	Over 26' thru 40'					
	14	29'								
	16	30'								
	18	31'								
	20	32'								
#4	14	29'	Up thru 20'	Over 20' thru 30'	Over 30' thru 41'	Over 41' thru 48'				
	16	32'								
	18	32'								
	20	34'								
	22	34'								
	24	36'								
#5	12	25'	Up thru 20'	Over 20' thru 30'	Over 30' thru 42'	Over 42' thru 48'				
	16	32'								
	18	33'								
	20	34'								
	22	35'								
	24	38'								
	26	38'					Up thru 28'	Over 28' thru 41'	Over 41' thru 52'	
#6	14	29'	Up thru 20'	Over 20' thru 31'	Over 31' thru 42'	Over 42' thru 48'				
	16	33'								
	18	35'								
	20	36'								
	22	36'								
	24	39'								
	26	39'					Up thru 28'	Over 28' thru 41'	Over 41' thru 54'	Over 54' thru 56'
#7	16	33'	Up thru 23'	Over 23' thru 34'	Over 34' thru 48'					
	18	37'								
	20	39'								
	22	40'								
	24	43'								
	26	43'					Up thru 29'	Over 29' thru 44'	Over 44' thru 60'	
	30	44'								
#8	24	43'	Up thru 25'	Over 25' thru 39'	Over 39' thru 48'					
	26	44'	Up thru 29'	Over 29' thru 44'	Over 44' thru 60'					
	28	44'								
	30	45'								
#9	16	33'	Up thru 22'	Over 22' thru 34'	Over 34' thru 48'					
	18	37'								
	20	39'								
	22	40'								
	24	44'								
	26	44'					Up thru 29'	Over 29' thru 44'	Over 44' thru 60'	
#10	18	37'	Up thru 22'	Over 22' thru 38'	Over 38' thru 48'					
	20	41'								
	22	45'								
	24	49'								
	26	49'					Up thru 29'	Over 29' thru 48'	Over 48' thru 60'	
	28	49'								
30	50'									
#11	22	45'	Up thru 24'	Over 24' thru 39'	Over 39' thru 44'					
	30	52'	Up thru 34'	Over 34' thru 49'	Over 49' thru 60'					
#12	24	49'	Up thru 25'	Over 25' thru 43'	Over 43' thru 48'					
	26	53'	Up thru 29'	Over 29' thru 47'	Over 47' thru 60'					
	28	53'								
	30	54'								

* Last Digit (s) of joist designation.

** For spans EQUAL TO OR EXCEEDING that shown above, one of the required rows, nearest mid-span, must be diagonal type. Bolted diagonal bridging shall be installed and connected BEFORE releasing the hoisting lines. Refer Specification Section 6 for handling and erection requirements.

*** See SJI Specifications 5.11 for uplift requirements

ACCESSORIES AND DETAILS

TABLE 2.7-1a							
K-SERIES JOISTS							
MAXIMUM JOIST SPACING FOR HORIZONTAL BRIDGING							
JOIST SECTION NUMBER*	Bridging Force P_{br}	BRIDGING MATERIAL SIZE					
		Equal Leg Angles					
		1 x 7/64 r = 0.20"	1-1/4 x 7/64 r = 0.25"	1-1/2 x 7/64 r = 0.30"	1-3/4 x 7/64 r = 0.35"	2 x 1/8 r = 0.40"	2-1/2 x 5/32 r = 0.50"
	lbs.	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.
1 to 8, incl.	340	5'- 0"	6'- 3"	7'- 6"	8'- 7"	10'- 0"	12'- 6"
9 to 10, incl.	450	4'- 4"	6'- 1"	7'- 6"	8'- 7"	10'- 0"	12'- 6"
11 to 12, incl.	560	3'- 11"	5'- 6"	7'- 3"	8'- 7"	10'- 0"	12'- 6"

*Refer to last digit(s) of Joist Designation
**Connection to joist shall resist a nominal unfactored 700 pound force (3114 N)

TABLE 2.7-2								
K, LH, and DLH SERIES JOISTS								
MAXIMUM JOIST SPACING FOR DIAGONAL BRIDGING								
JOIST DEPTH	BRIDGING ANGLE SIZE – (EQUAL LEG ANGLE)							
	1 x 7/64 r = 0.20"	1-1/4 x 7/64 r = 0.25"	1-1/2 x 7/64 r = 0.30"	1-3/4 x 7/64 r = 0.35"	2 x 1/8 r = 0.40"	2 1/2 x 5/32 r = 0.50"	3 x 3/16 r = 0.60"	3 1/2 x 1/4 r = 0.70"
	in.	ft.- in.	ft.- in.	ft.- in.	ft.- in.	ft.- in.	ft.- in.	ft.- in.
12"	6'-7"	8'-3"	9'-11"	11'-7"	13'-3"	16'-7"	19'-11"	23'-3"
14"	6'-6"	8'-3"	9'-11"	11'-7"	13'-3"	16'-7"	19'-11"	23'-3"
16"	6'-6"	8'-2"	9'-10"	11'-7"	13'-3"	16'-7"	19'-11"	23'-3"
18"	6'-6"	8'-2"	9'-10"	11'-6"	13'-3"	16'-7"	19'-11"	23'-3"
20"	6'-5"	8'-2"	9'-10"	11'-6"	13'-2"	16'-7"	19'-11"	23'-3"
22"	6'-4"	8'-1"	9'-10"	11'-6"	13'-2"	16'-6"	19'-11"	23'-3"
24"	6'-4"	8'-1"	9'-9"	11'-5"	13'-2"	16'-6"	19'-10"	23'-3"
26"	6'-3"	8'-0"	9'-9"	11'-5"	13'-1"	16'-6"	19'-10"	23'-2"
28"	6'-3"	8'-0"	9'-8"	11'-5"	13'-1"	16'-6"	19'-10"	23'-2"
30"	6'-2"	7'-11"	9'-8"	11'-4"	13'-1"	16'-5"	19'-9"	23'-2"
32"	6'-1"	7'-10"	9'-7"	11'-4"	13'-0"	16'-5"	19'-9"	23'-1"
36"	5'-11"	7'-9"	9'-6"	11'-3"	12'-11"	16'-4"	19'-8"	23'-1"
40"	5'-9"	7'-7"	9'-5"	11'-2"	12'-10"	16'-4"	19'-8"	23'-0"
44"	5'-6"	7'-5"	9'-3"	11'-0"	12'-9"	16'-3"	19'-7"	23'-0"
48"	5'-4"	7'-3"	9'-2"	10'-11"	12'-8"	16'-2"	19'-7"	22'-11"
52"	5'-0"	7'-1"	9'-0"	10'-10"	12'-7"	16'-1"	19'-6"	22'-11"
56"	4'-9"	6'-10"	8'-10"	10'-8"	12'-5"	16'-0"	19'-5"	22'-10"
60"	4'-4"	6'-8"	8'-7"	10'-6"	12'-4"	15'-10"	19'-4"	22'-9"
64"	**	6'-4"	8'-5"	10'-4"	12'-2"	15'-9"	19'-3"	22'-8"
68"	**	6'-1"	8'-2"	10'-2"	12'-0"	15'-8"	19'-2"	22'-7"
72"	**	5'-9"	8'-0"	10'-0"	11'-10"	15'-6"	19'-1"	22'-6"
80"	**	5'-0"	7'-5"	9'-6"	11'-6"	15'-3"	18'-10"	22'-4"
88"	**	**	6'-9"	9'-0"	11'-1"	14'-11"	18'-7"	22'-1"
96"	**	**	6'-0"	8'-5"	10'-8"	14'-7"	18'-4"	21'-11"
104"	**	**	**	7'-9"	10'-1"	14'-2"	18'-0"	21'-8"
112"	**	**	**	7'-0"	9'-6"	13'-9"	17'-8"	21'-4"
120"	**	**	**	**	8'-9"	13'-4"	17'-3"	21'-1"

**INTERPOLATION BELOW THE MINIMUM VALUES SHOWN IS NOT ALLOWED.
SEE TABLE 2.7-3 FOR MINIMUM JOIST SPACE FOR DIAGONAL ONLY BRIDGING.



SECTION 6.
ERECTION STABILITY AND
HANDLING*

When it is necessary for the erector to climb on the joists, extreme caution shall be exercised since unbridged joists may exhibit some degree of instability under the erector's weight.

(a) Stability Requirements

- 1) Before an employee is allowed on the steel joist: BOTH ends of joists at columns (or joists designated as column joists) shall be attached to its supports. For all other joists a minimum of one end shall be attached before the employee is allowed on the joist. The attachment shall be in accordance with Section 5.6 - End Anchorage.

When a bolted seat connection is used for erection purposes, as a minimum, the bolts shall be snug tightened. The snug tight condition is defined as the tightness that exists when all plies of a joint are in firm contact. This shall be attained by a few impacts of an impact wrench or the full effort of an employee using an ordinary spud wrench.

- 2) On steel joists that do not require erection bridging as shown by the unshaded area of the Load Tables, only one employee shall be allowed on the steel joist unless all bridging is installed and anchored.
- 3) Where the span of the steel joist is within the red shaded area of the Load Table, the following shall apply:
 - a) The row of bridging nearest the mid span of the steel joists shall be bolted diagonal erection bridging; and
 - b) Hoisting cables shall not be released until this bolted diagonal erection bridging is installed and anchored, unless an alternate method of stabilizing the joist has been provided; and
 - c) No more than one employee shall be allowed on these spans until all other bridging is installed and anchored.
- 4) When permanent bridging terminus points cannot be used during erection, additional temporary bridging terminus points are required to provide stability.
- 5) In the case of bottom chord bearing joists, the ends of the joist shall be restrained laterally per Section 5.4(f).
- 6) After the joist is straightened and plumbed, and all bridging is completely installed and anchored, the ends of the joists shall be fully connected to the supports in accordance with Section 5.6 - End Anchorage.

(b) Landing and Placing Loads

- 1) Except as stated in paragraphs 6(b)(3) and 6(b)(4) of this section, no "construction loads"⁽¹⁾ shall be allowed on the steel joists until all bridging is installed and anchored, and all joist bearing ends are attached.
- 2) During the construction period, loads placed on the steel joists shall be distributed so as not to exceed the capacity of the steel joists.
- 3) The weight of a bundle of joist bridging shall not exceed a total of 1000 pounds (454 kilograms). The bundle of joist bridging shall be placed on a minimum of 3 steel joists that are secured at one end. The edge of the bridging bundle shall be positioned within 1 foot (0.30 m) of the secured end.



- 4) No bundle of deck shall be placed on steel joists until all bridging has been installed and anchored and all joist bearing ends attached, unless the following conditions are met:
 - a) The contractor has first determined from a qualified person and documented in a site-specific erection plan that the structure or portion of the structure is capable of supporting the load;
 - b) The bundle of decking is placed on a minimum of 3 steel joists;
 - c) The joists supporting the bundle of decking are attached at both ends;
 - d) At least one row of bridging is installed and anchored;
 - e) The total weight of the decking does not exceed 4000 pounds (1816 kilograms); and
 - f) The edge of the decking shall be placed within 1 foot (0.30 meters) of the bearing surface of the joist end.
- 5) The edge of the construction load shall be placed within 1 foot (.30 meters) of the bearing surface of the joist end.

(c) Field Welding

- 1) All field welding shall be performed in accordance with the contract documents. Field welding shall not damage the joists.
- 2) On cold-formed members whose yield strength has been attained by cold working, and whose as-formed strength is used in the design, the total length of weld at any one point shall not exceed 50 percent of the overall developed width of the cold-formed section.

(d) Handling

Care shall be exercised at all times to avoid damage to the joists and accessories.

(e) Fall Arrest Systems

Steel joists shall not be used as anchorage points for a fall arrest system unless written direction to do so is obtained from a "qualified person" ⁽²⁾.

*For a thorough coverage of this topic, refer to SJI Technical Digest 9, "Handling and Erection of Steel Joists and Joist Girders."

⁽¹⁾ See Federal Register, Department of Labor, Occupational Safety and Health Administration (2001), 29 CFR Part 1926 Safety Standards for Steel Erection; Final Rule, §1926.757 Open Web Steel Joists - January 18, 2001, Washington, D.C. for definition of "construction load".

⁽²⁾ See Federal Register, Department of Labor, Occupational Safety and Health Administration (2001), 29 CFR Part 1926 Safety Standards for Steel Erection; Final Rule, §1926.757 Open Web Steel Joists - January 18, 2001, Washington, D.C. for definition of "qualified person".

